THE CSTE WASHINGTON REPORT

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INSIDE THIS ISSUE

EDITOR'S NOTE: The CDC recently launched its 2007 annual *State of CDC* Report – online and interactive! The electronic report allows readers to explore stories of health protection, cutting-edge research, and real-world disease investigation. Highlighted in the report are stories which draw attention to the urgent realities of chronic disease and health disparities, and to emerging infectious diseases and the pursuit of new research to support healthy people in the United States and throughout the world -- additional details are provided in this *Washington Report*.

The *CSTE Washington Report* is provided as an information resource for members of the Council of State and Territorial Epidemiologists on federal legislation and regulation affecting public health and epidemiology in the U.S.

SENATE HELP COMMITTEE HOLDS HEARING ON CLIMATE CHANGE AND PUBLIC HEALTH – On April 10th, the Senate Health, Education, Labor and Pensions Committee held a hearing on the topic, Climate Change: A Challenge for Public Health. The lead-off witness was Jonathan Patz, MD, MPH, Professor of Environmental Studies and Population Health Sciences, University of Wisconsin-Madison. He made a compelling case for serious health impacts of a rapidly warming climate particularly in terms of heat stress, air pollution with dramatic impact on asthma incidence, worsening water quality, and increasing infectious diseases. He urged stronger, comprehensive solutions that will address reduction in CO2 emissions and urged the U.S. to assume a leadership role to curtail expected rapid growth in CO2 emissions by developing countries. He made a direct link between lowering CO2 emissions and improving population health.

HOUSE ENERGY AND COMMERCE COMMITTEE HOLDS HEARINGS ON LEGISLATION TO INCREASE FUNDING AND AUTHORITY FOR THE FDA – Reacting to the incidents of contaminated food and drugs emanating from China that have caused deaths in the United States, the House Energy and Commerce Committee has drafted legislation to address the problem by strengthening the authority and budget of the Food and Drug Administration. The draft bill, *Food and Drug Administration Globalization Act of 2008*, builds on introduced bills seeking to address more specific issues: H.R. 3610 (Rep. Dingell); H.R. 3624 (Rep. Pallone); H.R. 3115 (Rep. Stupak); and H.R. 3484 (Rep. DeGette) as well as findings from investigations conducted by the Subcommittee on Oversight and Investigations, the report of the FDA's Science Board's Subcommittee on Science and Technology, and the Administration's Food Protection Plan and Import Safety Plan. Among the bill's food safety provisions is a requirement for all facilities operating within the U.S. or exporting food to the U.S. to register with the FDA. Registrants would be charged a payment of $2,000 per facility generating $600 million for food safety activities at the FDA, doubling that part of the FDA budget. The bill contains many other food safety provisions, including requiring foreign and domestic facilities to have safety plans in place to identify and mitigate hazards, expanding laboratory testing capacity through FDA accredited third-party laboratories, and providing the FDA with strong, flexible enforcement tools to issue mandatory recalls of tainted foods and strengthen fines on food facilities that fail to comply with safety requirements.

NIAID DESCRIBES RESEARCH PRIORITIES TO FIGHT DRUG-RESISTANT TUBERCULOSIS -- Tuberculosis (TB) has long been one of the world's great killers. Now, forms of drug-resistant TB-multidrug (MDR) and extensively drug-resistant (XDR)-are occurring at an ominous and accelerating rate. To help in the fight against drug-resistant TB, the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, has formulated an MDR and XDR TB research agenda.

A summary of the agenda, authored by NIAID Director Anthony S. Fauci, M.D., and members of the NIAID Tuberculosis Working Group, is now available online in *The Journal of Infectious Diseases*.

"The TB diagnostic tools in use today are antiquated, slow and insensitive; TB drug

regimens are complex and lengthy; and the only vaccine available does not provide effective protection against adult pulmonary TB," says Dr. Fauci. "The challenge of TB control is further compounded by the rise of drug-resistant TB, and we anticipate that the *NIAID Research Agenda for Multidrug-Resistant and Extensively Drug-Resistant Tuberculosis* will contribute substantively to the fight against this emerging threat."

The World Health Organization (WHO) estimates that 500,000 people worldwide have MDR TB, while the frequently fatal XDR TB has been detected in 46 countries. Factors contributing to the rising tide of drug-resistant TB include

• Lack of routine testing to determine TB drug-sensitivity

• Incomplete treatment of people infected with TB-causing bacteria

• The epidemic of TB in HIV-infected people

• Limited TB research by pharmaceutical companies, resulting in few new anti-TB drugs or other interventions.

The NIAID research agenda complements domestic and international efforts to prevent and control the spread of MDR and XDR TB. Whereas the WHO's STOP TB Partnership plan emphasizes increased surveillance and control and treatment efforts, the NIAID agenda focuses on biomedical research. The Institute also collaborates with the Centers for Disease Control and Prevention and other NIH Institutes and Centers on TB research efforts in the United States.

To prevent the further emergence and spread of MDR and XDR TB, the NIAID agenda identifies areas of biomedical research that are likely to contribute substantially to a global public health response. Building on existing efforts within the international network of TB research, NIAID's priorities include efforts to

• Develop and test reliable technologies to rapidly diagnose TB and to identify drug resistance

• Define the most effective use of existing TB therapies and other antibiotics available to treat drug-resistant TB and develop new drugs, particularly to treat MDR and XDR TB

• Better understand the basic biology of TB-causing bacteria and their interaction with the human host that underlie the development of drug-resistant TB

• Understand the epidemiology of drug-resistant TB

• Investigate the various manifestations of TB in adults, children and those with co-infections, including HIV/AIDS

• Conduct research to develop new vaccines and other preventive strategies.

NIAID is leading and sponsoring research activities to create a foundation of knowledge for the discovery of new diagnostics, drugs and vaccines. The Institute also supports the efforts of organizations, such as drug companies and public-private partnerships, to further develop these products into tools and approaches that enhance the quality of care for people with TB.

"Only a concerted global effort can counteract the rise of drug-resistant TB," notes Dr. Fauci. "Development of improved diagnostics and better treatment and control strategies will depend on collaboration with our partners at every research step, from basic science to large clinical trials."

The full NIAID research agenda for MDR and XDR TB is available at: http://www3.niaid.nih.gov/topics/tuberculosis/default.htm

CDC RELEASES STATE OF CDC REPORT ONLINE -- The CDC recently launched its 2007 annual *State of CDC* Report – online and interactive! The electronic report allows readers to explore stories of health protection, cutting-edge research, and real-world disease investigation.

Highlighted in the report are stories which draw attention to the urgent realities of chronic disease and health disparities, and to emerging infectious diseases and the pursuit of new research to support healthy people in the United States and throughout the world.

This year's online report is divided into four sections:

- **Inside CDC**—the *State of CDC*'s main report;
- **Community**—CDC's work in virtual communities and other interactive media;
- **News Room**—the latest CDC news containing current articles, press releases, and podcasts; and
- **Video Room**—videos about CDC's health protection and community outreach programs.

Go Inside CDC

Inside CDC takes readers and visitors on a journey through current public health protection and promotion. Featured sections include

- **Health Protection**

  CDC is committed to improving the lives of the people it serves and is focused on priority areas where CDC can ensure the greatest health impact. CDC's four

overarching Health Protection Goals—*Healthy People in Every Stage of Life*; *Healthy People in Healthy Places*; *People Prepared for Emerging Health Threats*; *and Healthy People in a Healthy World*—provide a strategic framework for achieving health protection and health equity.

The stories in this report exemplify CDC's successes, as the agency strives to become more adept at protecting the public's health, in all ways, in all places, at all times.

Listed below are some of the highlights found in the **Health Protection** section:

- Launched the next generation of the 15-year-old "5 A Day for Better Health" program, "Fruits & Veggies—More Matters."

- Awarded $35 million to bolster The Heightened Response to HIV.

- Supported the Colorectal Cancer Screening program through five pilot sites.

• **Leadership**

CDC made great strides in bringing together leaders in business, organizations, and communities who also benefit by working with CDC to achieve its goals. From protecting the homeland and improving business practices, to implementing effective intervention programs and developing better testing technology, new collaborations are allowing CDC to expand its reach across the health protection continuum.

Leadership section highlights include

- Completion of data analysis collected through CDC's National Health and Nutrition Examination Survey to assess the risk of common chronic diseases and conditions in the U.S. population that can be attributed to family health history.

- Establishment of the Federal Collaboration on Health Disparities Research as part of CDC's ongoing strategies to eliminate health disparities.

- Ten intensive on-site scientific evaluations of actual nanotechnology processes in partnership with eight industrial, academic, military, and research organizations.

• **Organizational Excellence**

In an era of limited fiscal resources and many competing priorities, CDC is committed to leveraging resources to achieve maximum health results and reduce health disparities. Prioritizing the agency's activities within the four Health Protection Goals ensures that CDC is focused on optimizing health impact in every laboratory on its campus, in every program it funds, in all its health protection

research, and in every outbreak CDC contains.

As a result of its organizational excellence, CDC:

- Received the highest rating on Improved Financial Performance as part of the President's Management Agenda.

- Created a business improvement office to increase the effectiveness of business activities.

- Targeted communication and media activities to successfully raise awareness about health concerns such as chronic fatigue syndrome, multidrug-resistant *Staphylococcus aureus*, foodborne illnesses, and multidrug-resistant tuberculosis.

For a piece of history that goes everywhere, the FY07 *State of CDC* Report, along with previous versions, can be downloaded from the *State of CDC*'s main page at http://www.cdc.gov/about/stateofcdc/index.htm

RESEARCH FINDINGS OPEN NEW FRONT IN FIGHT AGAINST AIDS VIRUS HUMAN PROTEIN -- May Offer Novel Target for Blocking HIV Infection
A research group supported by the National Institutes of Health (NIH) has uncovered a new route for attacking the human immunodeficiency virus (HIV) that may offer a way to circumvent problems with drug resistance. In findings published today in the online edition of the Proceedings of the National Academy of Sciences, the researchers report that they have blocked HIV infection in the test tube by inactivating a human protein expressed in key immune cells.

Most of the drugs now used to fight HIV, which is the retrovirus that causes acquired immune deficiency syndrome (AIDS), target the virus's own proteins. However, because HIV has a high rate of genetic mutation, those viral targets change quickly and lead to the emergence of drug-resistant viral strains. Doctors have tried to outmaneuver the rapidly mutating virus by prescribing multi-drug regimens or switching drugs. But such strategies can increase the risk of toxic side effects, be difficult for patients to follow and are not always successful. Recently, interest has grown in attacking HIV on a new front by developing drugs that target proteins of human cells, which are far less prone to mutations than are viral proteins.

In the new study, Pamela Schwartzberg, M.D., Ph.D., a senior investigator at the National Human Genome Research Institute (NHGRI), part of NIH; Andrew J. Henderson, Ph.D., of Boston University; and their colleagues found that when they interfered with a human protein called interleukin-2-inducible T cell kinase (ITK) they inhibited HIV infection of key human immune cells, called T cells. ITK is a signaling protein that activates T cells as part of the body's healthy immune response.

"This new insight represents an important contribution to HIV research," said NHGRI Scientific Director Eric D. Green, M.D., Ph.D. "Finding a cellular target that can be

inhibited so as to block HIV validates a novel concept and is an exciting model for deriving potential new HIV therapies."

When HIV enters the body, it infects T cells and takes over the activities of these white blood cells so that the virus can replicate. Eventually, HIV infection compromises the entire immune system and causes AIDS. The new work shows that without active ITK protein, HIV cannot effectively take advantage of many signaling pathways within T cells, which in turn slows or blocks the spread of the virus.

"We were pleased and excited to realize the outcome of our approach," Dr. Schwartzberg said. "Suppression of the ITK protein caused many of the pathways that HIV uses to be less active, thereby inhibiting or slowing HIV replication."

In their laboratory experiments, the researchers used a chemical inhibitor and a type of genetic inhibitor, called RNA interference, to inactivate ITK in human T cells. Then, the T cells were exposed to HIV, and the researchers studied the effects of ITK inactivation upon various stages of HIV's infection and replication cycle. Suppression of ITK reduced HIV's ability to enter T cells and have its genetic material transcribed into new virus particles. However, ITK suppression did not interfere significantly with T cells' normal ability to survive, and mice deficient in ITK were able to ward off other types of viral infection, although antiviral responses were delayed.

"ITK turns out to be a great target to examine," said Dr. Schwartzberg, noting that researchers had been concerned that blocking other human proteins involved in HIV replication might kill or otherwise impair the normal functions of T cells.
According to Dr. Schwartzberg, ITK already is being investigated as a therapeutic target for asthma and other diseases that affect immune response. In people with asthma, ITK is required to activate T cells, triggering lung inflammation and production of excess mucus.

"There are several companies who have published research about ITK inhibitors as part of their target program," Schwartzberg said. "We hope that others will extend our findings and that ITK inhibitors will be pursued as HIV therapies."